ANCIENT AND CONTEMPORARY STUDY OF VATSANABHA (Aconitum ferox wall.)

Kushboo Karte¹, S.R.Inchulkar², Sangeeta Bhagat³

¹M.D.Scholar, ²HOD & Professor, ³Lecturer
Department of Agad Tantra Avam Vidhvaidhak, Govt. Ayurved College, Raipur, Chhattisgarh, India

Email: kartekushboo@gmail.com

ABSTRACT
Ayurveda means “The Science of Life” (Ayuh means Life and Veda means “Science” in Sanskrit). Ayurveda the fundamental science of life is evolved primarily for maintenance of good health and to cure the diseases. Agadtantra is the one of the eight branches of Ashtanga Ayurveda, which deals with study of poisons, types, effects, and management. Vatsanabha is one of the most common drugs discussed in Ayurveda. Various prospective of this drug had been mentioned in Ayurvedic classics. In Ayurveda, it is described as Sthavara Visha (poison of plant origin) and Maha Visha (potent poison), and in modern science, according to its mode of action it is a cardiac poison. All parts of this plant are poisonous; however, the root and root tubers are the most potent, which is hazardous to human beings. Besides the hazardous effects, the root of Vatsanabha is considered to have medicinal values. In some text books, it is mentioned that seeds are also poisonous. By Shodhan sanskar, Vatsanabha has most therapeutics effects. The study of Vatsanabha mainly focussed on plant details, identification, therapeutic uses, toxic effects, medico-legal aspects etc.

Keyword: Ayurveda, Agad tantra, Poisoning, Symptoms, Treatment, Vatsanabha

INTRODUCTION
Vatsanabha is known to the Ayurvedic classics since very early times. The herb Visha is delineated in Atharvaved and Brahamana granthas. Among the Brihatrayi, Acharya Charaka mentioned it under Sthavar Vishaa.¹ Vatsanabh is described under thirteen varieties of Kanda Vishaa (tuberous root poisons) by Sushruta. Sushruta also described the four verities of Vatsanabha as well as their poisonous effects². In India, it grows in the Himalayan ranges. The dry root is tapering, slightly arched, with wrinkles. It is 5-10 cm long and 1-2 cm thick at upper extremity. Externally it is brown in colour but internally white in colour, when freshly cut and its colour changes on exposure to air. It has sweet taste, which gives its name Mitha Bisha. Aconite ferox is an herb used as an ingredient in many Ayurvedic formulations. It is a poisonous herb, but when used in smaller quantity after purification and processing, it is used as a medicine. It has many health benefits. In modern toxicology, according to its mode of action, Vatsanabha is categorised under cardiac poisons. Acharya Ras Vagbhatt preferred the name Visha for
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Vatsanabha and used it in the treatment of Kushtha, Timir, Gandmala Apachii, Nadivrana and Mushika Visha etc.

BOTANICAL NAME – Aconitum ferox wall.

FAMILY- Ranunculaceae
SYNONYMS – Amritum, Visha, Garalam, Nagam, Nabhi, Pranhamaramanum, Mahaushadham, Vatsanabha, Vatsanag, kshwed, Vishaa, Amrita.

COMMON NAMES - Monkhood, Mousebane Soldiers cap, wolfsbane helmet flower, old wives hood friers cap, Bears foot.

COMMON POISONOUS VARIETY – A.ferox; A.napellus; A.palmetum; A.heterophyllum

SCIENTIFIC CLASSIFICATION
Kingdom - Plantae
Division - Magnoliophyta
Class - Magnoliophyta
Order - Ranunculacea
Family- Ranunculacea
Genus- Aconitum
Species- ferox

VERNACULAR NAMES- Assami- Visha
Bengali- KathVisha, mitha Visha
Bihari- Dakara
English- Monks hood aconite
Gujrati- Basnag, Bachnag
Hindi- Bachanag, Mitha Visha Mitha teliya, Teliya Visha
Kannada- Vasnabhi
Malayam- Vatsanabhai
Marathi- Bachnag
Panjabi- Mohair, Shyam mohari
Sanskrit-Vatsanabha
Tamil- Vasanasi
Telugu- Ativasnabhi

KULA - VATSANABHA KULA

HABIT- The plant is common in the sub-alpine and alpine zone of Himalayas. It grows well in hilly regions of northern and eastern parts of India, extending from Assam to Kashmir.

PROPAGATION– By seeds and vegetative methods.

CLASICAL CATEGORIZATION
Charaka Samhita- Sthavara Visha
Sushruta Samhita- Kanda Visha

Bhavaprakash nighantu-Dhatvadi Varga
Raja nighantu- Mishraka Varga
Dhanvantari nighantu- Mishraka Varga
Shodhal nighantu- Candadi Varga
Kaidev nighantu- Visha Varga

IDENTIFICATIONS

PHYSICAL APPEARANCE OF THE PLANT
Acharaya Ras vagbhatta described it as Pandura varna (yellowish grey colour). Its root is similar to Navel of calf and is not more than five angul in length. According to Bhavprakash, its leaves resembles leaves of Nirgundii, tuber resembles like umbilicus of calf. Around the Vatsanabha, there is no other plant grows. It is a shrub having blue flowers, the size of the root is described as 5-7 angul and circumference is 1- 1.5 angul. In some texts certain characteristics are given about the best quality of Vatsanabha.

ACTIVE PRINCIPLES
Aconite ferox is rich in alkaloids, & it is more potent. Its root contains toxic alkaloids like Aconitine, Mesaconitine, Hypaconitine, Pseudo aconitine, Indaconitine, Picraconitine, Aconine along with bikhacconitine, chasmaconitine.

PROPERTIES OF VATSANABHA

Sthula (bulky tuber)
Snigdha (smooth on outer texture)
Guru (heavy indigestion)
Nava (newly harvested)
Phala pakanta grahya (collected after fruits have dried up)
Kitadi abhakshita (not affected by insects and pests).

TYPES
According to Sushruta- 4
According to Ras vagbhatta, The colour and the properties of each variety are given below

<table>
<thead>
<tr>
<th>S. no</th>
<th>VARIETY</th>
<th>COLOUR</th>
<th>PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brahmana</td>
<td>Pandur varna</td>
<td>Rasayan</td>
</tr>
<tr>
<td>2</td>
<td>Kshatriya</td>
<td>Rakta varna</td>
<td>Deha pushti kar</td>
</tr>
<tr>
<td>3</td>
<td>Vaishya</td>
<td>Pita varna</td>
<td>Kushtagna</td>
</tr>
<tr>
<td>4</td>
<td>Kshudra</td>
<td>Krishna varna</td>
<td>Dhatu karma</td>
</tr>
</tbody>
</table>
According to *Ras tarangni* - 3\(^{10}\) *Krishnabha* (blackish), *Kapish* (brownish yellow), and *Pandur* (whitish)\(^{11}\). They are considered as superior to each other in the same order.

**BOTANICAL DESCRIPTION**\(^{11}\)

Aconite is a Greek word meaning arrow (Acron). The arrows were coated with this poison and used. Hence, the name is Aconite. It is one of the oldest known drugs and is of two different kinds. They are poisonous and non-poisonous. It is a perennial herb.

Root- Paired, the shape of daughters root may be avoided or ellipsoïd, there length is 2.5 to 4 cm, about 1- 1.5 cm thick, roots fibres are filliform, dark brown externally, yellowish white on fracture, other tubers are much shrunk and wrinkled with more numerous root fibres.

STEM - Erect, with or without a slender, simple, 40-90 cm high, covered with sharp spreading yellow hair in the upper part and glabrous below.

LEAVES - Scattered, distant, cleft or lobed, simple, alternate oval in shape. Towards the bottom leaves are larger in size and on the top of the plants leaves are growing smaller and shorter.

INFLORESCENCE- Peduncle straight, bearing flow- ers on both sides, they are pale dirty blue, yellow, and pink zygomorphic flowers with numerous stamen.

FRUITS- Tube like capsule or just like helmet that opens at the top, Carpels 5, 15-20 mm lon and 4-5 mm.

SEEDS- Obovoid to Obpyramidal 2.6 -3mm. Long winged along with the raphe.

**DISTRIBUTION**- Grows wild in the alpine Himalayas, Kashmir at an Altitude of 3600m.

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![Figure-1: Herb of Vatsanabha](image1)

![Figure-2: Roots of Vatsanabha](image2)

**Table 2: RASA PANCHAK**\(^{12}\)

<table>
<thead>
<tr>
<th>Rasa</th>
<th>Madhura</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guna</td>
<td>Laghu, Ruksa, Tikshna, Vyavayi, Vikashi</td>
</tr>
<tr>
<td>Virya</td>
<td>Ushna</td>
</tr>
<tr>
<td>Vipaka</td>
<td>Katu</td>
</tr>
<tr>
<td>Karma</td>
<td>Vat-kaphaghna, Vishahara, Jvarahar, Madakari, Kushthaghna</td>
</tr>
<tr>
<td>Prabhav</td>
<td>Rasayana</td>
</tr>
</tbody>
</table>

**INDICATIONS**

*Jwara*(sannipat),*Jangama Visha, Kushtha, Madhumeha, Swasa, Kasa, Plihodar, Agnimandya, Vata rogas etc.*

*Ras vagbhatta* specifically documented the relation between duration of its administration and its therapeutic effects.

**Table 3**

<table>
<thead>
<tr>
<th>Period of Administration</th>
<th>Cures all the eight major types of kushtha</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Months</td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>Improves complexions. (cosmetic purpose)</td>
</tr>
<tr>
<td>12 months</td>
<td>Cures all diseases</td>
</tr>
</tbody>
</table>

**PART USED** - mainly roots are used.

**MECHANISM OF ACTION** \(^{13}\)

Aconite act on nerve axons by opening sodium channels.

It also inhibits complete repolarization of the membrane of myocardial tissue causing repetitive firings.

It stimulates vagal medullary centre.
METABOLISM
Metabolism of aconitum alkaloids is mainly carried out by the enzymes esterase. Aconitine is converted into benzoylaconine through hydrolysis in C-8 position and into aconine.

TOXIC EFFECT OF VATSANABHA
Sushruta clearly described the toxic effect of Vat-sanabha (Griva sthambh) (Stiffness of the neck), Pitavinmutra (yellow colour in urine and faeces) and Pitanetrata (yellowish discoloration of eyes).

STAGES OF VATSANABHA POISONING ACCORDING TO RAS RATNA SAMMUCCHYA
Ras Vagbhatta described the eight stages of Vatsanabha that is ASHTA VEGA.

<table>
<thead>
<tr>
<th>VEGA</th>
<th>SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Pratham vega</td>
</tr>
<tr>
<td>2nd</td>
<td>Dwitiya vega</td>
</tr>
<tr>
<td>3rd</td>
<td>Trittiva vega</td>
</tr>
<tr>
<td>4th</td>
<td>Chaturthi vega</td>
</tr>
<tr>
<td>5th</td>
<td>Pancham vega</td>
</tr>
<tr>
<td>6th</td>
<td>Shashtam vega</td>
</tr>
<tr>
<td>7th</td>
<td>Saptam vega</td>
</tr>
<tr>
<td>8th</td>
<td>Ashatham vega</td>
</tr>
</tbody>
</table>

According to Sushruta Sthavar Vishaa Veg

Table No.5

<table>
<thead>
<tr>
<th>VEGA</th>
<th>SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PrathamVega</td>
<td>Blur vision &amp; Loss of movement of tongue, Dyspnoea</td>
</tr>
<tr>
<td>DwitiyaVega</td>
<td>Shivering, Debility, Burning Sensation, Pain in throat</td>
</tr>
<tr>
<td>TrittivaVega</td>
<td>Pain In Heart, Dryness Of Palate. Severe Pain In Stomach, Swelling eyes</td>
</tr>
<tr>
<td>ChaturthiVega</td>
<td>Pricking pain in Stomach &amp; intestine, Hicc-up, cough</td>
</tr>
<tr>
<td>PanchamVega</td>
<td>More Elimination Of Cough, Discolouration, Pain In The Joints, Aggravation Of Dosa, Pain in large intestine</td>
</tr>
<tr>
<td>ShashtamVega</td>
<td>Loss of consciousness, Severe diarrhoea</td>
</tr>
<tr>
<td>SaptamVega</td>
<td>Cutting Pain in Shoulder</td>
</tr>
</tbody>
</table>

SYMPTOMS ACCORDING TO MODERN

Table 6

<table>
<thead>
<tr>
<th>SYMPTOMS ACCORDING TO MODERN</th>
<th>MODERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning sensation from mouth to stomach</td>
<td>Profused sweating</td>
</tr>
<tr>
<td>Tingling &amp; Numbness in mouth, tongue &amp; Pharynx</td>
<td>Weakness of limbs</td>
</tr>
<tr>
<td>Salivation</td>
<td>Inability to stand or walk</td>
</tr>
<tr>
<td>Nausea</td>
<td>Muscle pain &amp; Cramps</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Pupils contracts &amp; Dilate, but remain dilate at the later stage</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>Dimness of vision</td>
</tr>
<tr>
<td>Dryness of mouth</td>
<td>Diplopia may occur</td>
</tr>
<tr>
<td>Polydipsia</td>
<td>Pulse becomes slow, feable &amp; irregular</td>
</tr>
<tr>
<td>Difficulty in swellwing</td>
<td>Hypotension</td>
</tr>
<tr>
<td>headach</td>
<td>Breathlessness</td>
</tr>
<tr>
<td>Giddiness</td>
<td>Mental condition normal but hallucination</td>
</tr>
<tr>
<td>Pallor</td>
<td>Fatigueness in muscles</td>
</tr>
</tbody>
</table>

MANAGEMENT ACCORDING TO AYURVEDA ANTIDOTES (PRATIVISHA)
Accidental poisoning or over dose of aconite may produce the many symptoms. There are so many antidotes have been mentioned for aconite poisoning. Acharya Ras Vagbhatta specially mentioned that the treatment is possible up to 5-7 vegas only. According to Ras Ratna Samucchya Go Ghrita (cows ghee) is considered as one of the best anti dote for Visha. In case of its poisoning, Vamana shall be induced first followed by lepa or Anjana or Kwatha of visaghna Gana. Tankan (Borax) is considered to be the main antidote. It may be administered along with Ghee. Generally equal quantity of Vatsanabha and tankan (borax) are recommended to neutralize the toxic effect of the Vatsanabha. If tankan is not available, Maricha (piper nigrum) may be used. Another alternative antidote is Arjuna (Terminalia arjuna) bark is mixed with honey and ghee.

MANAGEMENT IN TOXICOLOGY
Most of the aconite varieties are poisonous; the most poisonous part is root. The main active principle is aconitine which produces toxic effects. Gastric lavage with tannic acid/ activated charcoal. Inotropic therapy is required if hypotension persists, and atropine (0.5-1mg IV) should be used to treat bradycardia. Ventricular arrhythmia is treated with amiodarone and
flecainide (first-line treatment). In refractory cases and cardiogenic shock, early use of cardiopulmonary bypass is recommended Symptomatic treatment.

INDICATION & CONTRAINDICATION FOR VATSANABHA
In certain disease, it may be administered in summer, but in case of Sattva prakriti, Visha is used during winter and spring. Vatsanabha should not be used in rainy season and on the cloudy days. It may be used daily as Rasayana after performing ghitapana and shodhan. Visha is contraindicated for pitta predominant, kliyva (impotent), Krodhi (Angers), kings or royal employers, giddiness, sun stroke after walking for long distance, when feeling thirsty and hungry. It is also contraindicated in pregnant, children, old age, in emaciated peoples, in marma (vital) Rogas etc. Exposure to fire and heat should also be avoided. Some of restricted diet should be followed. Death may occur from shock and syncope but usually due to arrest of respiration.

FATAL DOSES-
One gram of the root and 20 Drops of Tincture may cause death. Four mg of the aconitine and 250 mg of the extract is fatal for human beings. The fatal period for Vatsanabha poisoning is 2-6 hrs. Ayurvedic classics recommend that Vatsanabha is to be administered only after proper Shodhan (Processing) and Maran (Incarination).

SHODHAN (DETOXIFICATION) OF VATSANABHA
The tuberous roots of aconite are treated in several ways, before oral administration. There is more description of Shodhan procedure in Ras Shastra. Detoxification procedure is done by using various liquids either by soaking or boiling on it. Liquids may be Water, or Gomutra (Cows urine), or Ajadugdha (Goat milk), Godugdha (Cow milk), Triphala kwatha (De-cocition Of Triphala), Mahishamala (Buffalo Dung), Ksharajala/Tankodaka (Borax water)

MARAN OF VATSANABHA
Maran procedure is generally done with Tankana (Borax), or Tankana and Maricha (Piper Nigram) or by using Twak (Bark of Cinnamomum Zeylicum) or Gandhaka (Sulphur)

THERAPEUTIC DOSE
1/16- 1/8 Ratti (7 to 15mg)

THERAPEUTIC USES
There are so many preparations of vatsanabha which are used in Shira shula, Shula Vrishchik Visha, Shotha, (as lepa), Shukra meh, Snayuk.

POSTMORTEM APPEARANCE
There is no specific sign in Aconite poisoning. The poison is often difficult to detect by chemical analysis. Fragment of root may be found in stomach content. The odour of chloroform may be perceived when the liniment is swallowed. Mucous membrane of the stomach & small intestine is congested & inflamed. Hemorrhagic pulmonary edema and diffuse contraction band necrosis in myocardium may be present. Aconitine is extremely unstable and is destroyed by putrefaction.

MEDICO-LEGAL ASPECTS
It is often regarded as an ideal homicidal poison because of its cheap and easily availability. Lethal dose of Aconite is small and the fatal period is short. Colour can be distinguished by mixing it with pink coloured drinks. Taste can be masked by mixing it with sweets or by giving it with paan leaves (betel leaf). Extremely unstable and destroyed by putrefaction, hence cannot be detected by chemical analysis. Accidental poisoning occurs mostly from eating the root in mistake for horse-radish root or by therapeutic application of liniment containing aconite or by added it to liquor for better kick. Poisoning is more common from accident rather than homicide or suicide. Homicidal cases are not frequently reported. It is also used as an abortifacient, cattle and arrow poison. Suicide is not common.

FORMULATIONS
There are so many formulations of Vatsanabha like Hingleshvara Rasa, Anand bhairava Rasa, Jwara maram Rasa, Mrityunjaya Rasa, Amrit Rasayan, Panchamrita Rasa, Tribhuvan kirti Rasa, Kaphaketu rasa, Rambhana Rasa, Visha taila etc.

DISCUSSION
Vatsanabha is one of the most important herbs of Ayurvedic formulary, which have so many therapeutic actions. The symptoms of aconite poisoning are nau-
sea, vomiting, dyspnoea, Numbness & tingling in tongue and mouth. According to Ayurveda, the main symptoms of vatsanabha poisoning are Griva sthambh, Pitanetra, Pitta vina and pitamutrata. Due to having highly toxicity effects, advised only to be used after proper purification. Because of Its useful properties like Ushna, Teekshna, is the main content in many formulation & preparations. Vatsanabha is mainly used in Vata-Kaphaj Vikar (disorders). It is also used in Jwara (sannipat), Jangama Visha, Kushta, Madhumeha, Swasa, Kasa, Plihodar, Agnimandya etc. it is a boon for Ayurveda, hence it is also called Amrita. Indications and contraindications should be properly follow, improper use of it may causes severe complications or may be fatal. So its purification must be done properly by using various methods of purification. The use of Vatsanabha and its preparations is contraindicated in Pitta dominant persons, in old & in emaciated person, in pregnancy, and during summer. Used of aconite as homicidal and suicidal poisoning is more common in India, because of its unstable nature it is generally used as homicidal poison. It is extremely unstable and is destroyed by putrefaction. Hence it is difficult to detect its presence in any sample or in dead body. So it is more important to identify it properly.

CONCLUSION
From this study it is concluded that Vatsanabha is very important drug mentioned in Ayurvedic pharmacopoeia and formularies. After purification we can use it to get more benefits. It is a poisonous herb, but when used in smaller quantity after purification and processing used as a medicine. It has so many health benefits (Rasayana) as well as therapeutic effects. It is also used as Rasayana (rejuvenating agent) which enhance health, happiness and longevity, and maintain the body physiological functions as well as provide good health. Improper use of Vatsanabha can produce adverse effects and complications. Procedure of Shodhan (Processing) and Maran (Incineration) should be done properly. It should be done in open place to avoid complication, and proper precautions should be taken during processing and incineration. Its fatal dose is small and fatal period is short. Hence its proper identification, adverse effects, Therapeutic uses, complications, its management, Medicolegal aspects are very important in this study.

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